however, was but for a brief period. A knowledge of the cordial welcome which American contributions to science had always met with at the hands of the principal scientists and learned bodies of Italy, was sufficient to convince the Institution that a cessation of intercourse would last but a short time, while it would terminate beneficially to both parties. The result was as predicted. Shortly after the stoppage of transmission, there was manifested by the scientific portion of the Italian people a strong desire that it should be resumed. Negotiations were soon begun, and after two years Italy acceded free entry to parcels bearing the familiar endorsement of the Institution. The decree guaranteeing this right may properly be said to mark an epoch in the history of the Smithsonian Institution, as well as in that of the advance of scientific education. The Institution has a printed catalogue of foreign correspondents, numbering nearly 1,600 learned bodies, and, in addition, an extended manuscript list of individuals with whom it is in correspondence abroad, which embraces the names of the most eminent *savans* of the Old World. This shows that outside the United States, the policy of the Institution is everywhere highly endorsed; while fresh evidence of the fact is continually being received from new organisations, having for their object the advancement of science, in the form of applications for enrolment in the Smithsonian list of correspondents.

With no desire for a knowledge of the terms of the bequest, and satisfied as to the correctness of their own opinion that Smithson's gift was solely for the people of the United States, many Americans do not approve of extending the benefits of the said gift beyond the narrow limits of the land in which they themselves reside. In so enlightened an age, and with Smithson's will easily accessible, the error of such an opinion is unpardonable.

The mistake made by Congress, however, shortly after the bequest was accepted, is in a measure to be excused. The trust was of a novel character, while the instrument conveying it to the care of the United States made known but briefly the design of the giver. The life and character of the testator ought to have been closely investigated in order to arrive at a proper appreciaion of the true spirit of the terms upon which the money was given and accepted. It would appear that without an investigation of this kind, or certainly without a knowledge of Smithson's intention, Congress directed the management of the interest from the fund, for a few years immediately subsequent to its acceptance by the United States Government, in such manner as to divert the bequest for a long time almost entirely from its legitimate purpose. Several hundred thousand dollars yielded by a fund left for the "increase and diffusion of knowledge among men," was sunk in "brick and mortar." Had the amount expended in the erection, not to speak of the large sums paid out for the maintenance and repair, of the stupendous structure known as the Smithsonian building, been added to the principal of the original fund, the Institution would have been enabled to realise to a much fuller extent than has been done the anticipations of the generous foreigner whose name it perpetuates. While many were convinced of the fact at the time the fund was accepted, it is now universally admitted that for the "increase and diffusion of knowledge," brains and the printing press are the essential requisites, and that for the accommodation of these a building of moderate size and of small cost is all that is needed. The Smithsonian Institution, however, the especial object of which is that just set forth, continues to occupy a structure which in point of dimensions is vastly more extensive than is needed for its operations. The cost of maintaining such an edifice is very great, while, owing to its peculiar style of architecture, contingent repairs are frequent as well as expensive. It is to be hoped that the building will, before long, become the property of the Government, and the purchase money be added to the present Smithson fund. This vast edifice is suitably adapted to the exhibition of a Museum on a scale worthy the capital of the nation. The nucleus of such an establishment is already cared for by the Institution, but, although belonging to, is not maintained entirely at the expense of, the Government. The purchase in question of this building would be an acknowledgment of the intention of the United States to correct, as far as possible, the errors committed when the trust was accepted, and would prove an earnest to the people of other lands (for whom, equally with ourselves, the gift is designed) that the trustees of the munificent liberality of Smithson intended hereafter to carry out his wishes according to the letter and spirit of his will.

The efforts of the distinguished head of the Institution so to conduct the establishment as that the greatest good may eventually result to the greatest number, are appreciated far and wide, while his untiring devotion to the cause of education has rendered his name familiar to the most distant portions of mankind.

PHYSIOLOGICAL RESEARCHES AT GRATZ

Untersuchungen aus dem Institut für Physiologie und Histologie in Gratz. Herausgegeben von Alexander Rollet. Zweites Heft. (Leipzig: Wilhelm Engelmann, 1871. London: Williams and Norgate.)

THIS record of Histological and Physiological research in Styria contains a series of interesting and important papers.

The first of these is one by the editor on the classification of tissues. Nearly every author who has written on Histology generally has put forth some classification or other. Amongst these, that of Dr. Beale in Todd and Bowman's "Physiological Anatomy and Physiology" (Ed. 1866, p. 70) is cited as one of the worst and most illogical. It is a difficult question to determine what are and what are not elementary units of histological structures. Dr. Rollet founds his classification, as far as possible, on the data afforded by the history of the development of the tissues. Thus, endothelial structures are classed with connective tissue, and separated entirely from epithelial, as being developed in the pleuroperitoneal cavity of the embryo. The classification arrived at is as follows:—

1. Sencocytes.
2. Red blood corpuscles.
3. Elementary parts of connective tissue.
4. Elementary parts of fatty tissue.
5. Elementary parts of muscular tissue.
6. Elementary parts of nerve tissue.
7. Elementary parts of epithelial tissue.

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This classification seems to be an excellent one. For its further development we must refer to the paper itself.

A paper on the septic glands of the stomach by Dr. Rollet follows the former, and is most exhaustive in character, and the fact that the methods by which the results have been arrived at are most carefully described is especially to be commended. A new carmine solution is recommended which we have tried with excellent results. It has the advantage of being neutral, and of allowing of the addition of a certain amount of acid without suffering precipitation. It is prepared by boiling for five hours 35 grains of carmine with 270 cc. of dilute sulphuric acid (one volume of concentrated acid to fifteen volumes water), the volume being kept constant by the addition from time to time of water. The resulting solution is filtered and diluted with four times its volume of water. The sulphuric acid is then neutralised with carbonate of barium, and the solution quickly filtered. As soon as the filtrate has run off, a fresh quantity of water is poured on the precipitate, and comes through strongly coloured. Four or five filtrates may thus be obtained. The first two do not keep well, the third, fourth, and fifth do. From these solutions may be obtained what is called by Dr. Rollet carmine-red, which is soluble in distilled water.

It is too much the fashion amongst English histologists to aim at staining the nuclei only of the cells of tissues, whereas what is far more valuable is a clear definition of the boundaries of the cell itself. This result is in most cases only to be obtained by using a perfectly neutral solution of carmine such as the one just described. Dr. Rollet has found it yield very good results in cases where carminate of ammonium had failed. It would probably be found very good for silver preparations.

In a short notice it is impossible to do justice to such a paper as this. Dr. Rollet describes the glands of the rabbit, cat, dog, ox, sheep, pig, hedgehog, and other animals. He has also compared the appearance presented by the glands of the hybernating and active bat. The journal contains also an account of a "Commutator for Batteries in Physiological Laboratories," invented by Dr. Rollet; a paper on the "Development of Spermatozoa," by Dr. Victor V. Ebor, of great importance; another, on the "Glands of the Larynx and Trachea," by Dr. Mathias Boldyrew, who describes glands in all respects resembling pyers glands, as occurring occasionally in the larynx of the dog; and "Remarks on the effects of the administration of small quantities of curare in successive injections," by Julius Glase. The results are very remarkable. The animal becomes at each injection more and more sensitive to the poison, and finally reaches a state in which an extremely small quantity produces immediate convulsions and even death. Moreover, the injections may be intermitted for days and yet the animal remain as sensitive as before. The author believes that the system becomes adapted to the poison in such a way as to absorb it more rapidly, or that an actual change in some of the nervous centres occurs. Of course we cannot consider this a case of so-called cumulative poisoning, since the animal remains apparently perfectly healthy between the doses. The last paper is one on the "Ciliated Epithelium of the Uterine Glands." The author, Dr. Gustav Sott, has observed cilia in motion in the uterus of the cow, sheep, pig, rabbit, and moose. H. N. M.

OUR BOOK SHELF

A History of British Birds. By the late William Yarrell, V.P.L.S., F.Z.S. Fourth Edition, revised by Alfred Newton, M.A., F.Z.S. Parts 1 and 2. (London: Van Voorst, 1871.)

"YARRELL'S British Birds" is without doubt one of the best known and most widely appreciated books on Natural History ever published in this country, and has probably done more than any other work to excite and augment an interest in one of the most attractive branches of zoology. At the same time, "Yarrell's Birds" is neither cheap nor popular in the ordinary sense of these terms, and the fact of three large editions of it having been sold, and a fourth being now called for, is a sterling proof of its extraordinary merits. The third edition of the work was issued in 1856, a few months before the author's death. For the editorship of the present (fourth) edition the publisher has secured the services of Prof. Newton of Cambridge, than whom no one is better qualified for the undertaking. Moreover, what is of still greater consequence, it may be added that, so far as we can judge from the parts of the work that have as yet reached us, Prof. Newton has set about the task entrusted to him in a very thorough way. As has been observed in the prospectus of the new edition, the literature of the subject has been nearly doubled within these last thirty years—that is, since the date of the publication of Mr. Yarrell's original work, while even since the issue of the last edition an extraordinary augmentation has been made of our knowledge of British Birds. "Very many of the species respecting which little was actually known in 1856 have been traced by competent observers to their breeding-quarters, and their habits ascertained, and in some instances minutely recorded." Mr. Yarrell's later editions having been little more than reprints of the original, with the intercalation of certain species recorded from time to time in the "Zoologist" and similar periodicals as "new British birds," it follows that a good deal of alteration and addition was necessary to bring the work up to the present standard of ornithological knowledge. This the new editor has apparently determined to effect, in spite of the vast amount of labour involved in so doing, which, on the whole, will fall little short of that of preparing an entirely new work on the subject. Such articles as those on the Griffon and Egyptian Vultures and the Greenland and Iceland Falcons in the first number require to be entirely rewritten, while material additions have to be made to the history of even the commonest species, particularly as regards their geographical range and their representation by allied forms.

The woodcuts of the present edition are mostly the same as those prepared for the original work.

It is certainly a decisive proof of the present popularity of ornithology, so far at any rate as regards the knowledge of our native species, that while Mr. Gould's "Birds of Great Britain" is still unfinished, and Messrs. Sharpe and Dresser have lately begun an entirely new work occupying nearly the same ground, a fourth edition of Mr. Yarrell's "History of British Birds" should be commenced with every prospect of permanent success.

P. L. S.

WE have lately received the last published Report on the progress of Entomology prepared in connection with the *Archiv für Naturgeschichte.* In the space of 226 pages it includes a review of all the works and papers published in 1867-68 on the subject of Entomology, taking that word in what may be called its Linnean sense, namely, as embracing the study of Insects, Arachnida, Myriopoda, and Crustacea. Of these reports, commenced by Erichson, continued by Schaum, and after his illness by Gerstäcker, it is impossible to over-estimate the value, for although the information contained in them upon the species and sys-

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